Patent Application of
Martin O.Grimes, Jr.

for

METHOD AND APPARATUS FOR SURFING ON ARTIFICIAL SURFACES

Field of the Invention

This invention relates to surfing, specifically to "*SurfSliding*", a new sport of skill which consists of controlled movements on a short *"LawnBoard"* strapped to the feet of the surfer who glides downhill by gravity and kinetic energy over a slope covered with artificial turf and lubricated by water.

The slopes, mostly in the form of large open pipes, are designed to allow the surfer to predetermine his own line of movement. Also, different vehicles, such as modified inner tubes, sleds or toboggans, can be used for a ride on SurfSlide ramps.

SurfSliding can offer a water based sport anywhere, regardless of mountains or oceans. The controlled environment allows for SurfSliding to be enjoyed by day or night for an extended season or all year round, depending on the climate.

Description of the Prior Art

Surfing on waves and skateboarding on land or ramps have been sporting attractions to many people for quite some time. Snowboarding has recently become a very popular winter sport in mountain areas. Wave pools and water slide parks are abundant in many areas. Such sports attractions are usually confined to geographical locations, i.e. surfing to areas with oceans or lakes, or snowboarding to areas with mountains, snow and cold seasons.

To the inventor's knowledge, there is no prior art of SurfSliding. Water slides are the closest known type of art. They are usually elongated tubes or troughs following predetermined circuitous path downward from an elevated starting platform. A typical apparatus of this type is described in U.S.Pat.No.4,194,733, which was issued to B.Whitehouse, Jr. on March 25, 1980. A slide apparatus which has a generally parabolic upwardly opening cross section is defined in U.S. Pat. No. 5,137,497 issued to David J. Dubeta on August 11, 1992. One major difference is that waterslide tubes and troughs are not designed to allow a user to stand erect. Additionally, they are not designed for the user to be an active participant in the ride, only a passive user.

By contrast, the SurfSliding ramps are designed for active motion with a continued pursuit and challenge for increasing the level of skill towards daring acrobatic movement and trickery while standing erect. Additionally, more than one user can be on the ramp system at the same time.

General Description of the Invention

The present invention is a ***SurfSlide*** which is to provide for a new sport of skill during an extended season. The 'SurfSlide Sport' contains the following elements:

Starting: The Takeoff!

To start a ride, the rider must commit to a given movement. To do so, he must lean forward and into the slope to attain speed. Simultaneously, he must choose a path on which to ride. This is called choosing or picking a line.

First Turn

The rider must lean his body weight to the desired side. This weight transition forces the board's surface to focus on one rail and the center fin. This focused rail becomes the inside rail (the opposing rail is considered the outside rail). Control and movement is achieved by one's command of body position.

Subsequent Turns

A ride is composed of continuous balancing and weight shifting. A turn is the result of weighting and un-weighting while the rider shifts the board position from rail to rail. By using body torque, the rider's footwork controls the board's positioning as it passes over a given surface. This active control of turns makes the ride.

Trickery

The power of gravity, the flow of water, and the skill of riders provide for many exciting maneuvers. LawnBoards have foot straps allowing riders to make many such

maneuvers, including aerial acrobatics. The continuous advance of maneuvers will drive the technology of the sport.

The invention facilitates this new sport of downhill surfing on a water lubricated artificial surface suitable for water-oriented themeparks, additions to ski resorts, or stand alone sporting facilities.

The new ***apparatus*** is made from commercially available materials, components, and manufacturing processes. The apparatus can be built as an above-ground structure, an in-ground structure, or a combination of the two.

The ***above-ground apparatus*** is a ramp system consisting of large open pipes constructed from high strength / low weight materials cradled in a support structure. The interior surfaces of the open pipes are lined with an artificial surface material similar to those used on golf courses. A gutter system on both sides of the pipes along the rims provides a thin sheet of water or other lubricant to continuously run down over the surface material.

In certain soil conditions, ***in-ground slides*** offer advantages. The open pipe is scooped out from the soil, and the planking is replaced by a material such as gunited concrete or sprayed fiber glass walls. The removed soil can be used for landscaping around the SurfSlides. The water collection channel is inserted at the bottom and covered with the same grating as in the above-ground structure. The gutter system is built into a precast concrete channel and hidden by a concrete cover. The cover also serves as a safety walkway. It is easy to open for service and adjustment of the gutter system.
The advantages of the in-ground slides are:

- Better fit of the SurfSlides into the landscape, aesthetically more appealing;
- Rounded turns instead of discrete angles;
- Great flexibility for varying dimensions and shape of open pipe cross sections;
- Reduced danger when surfers perform acrobatics above the 'gunwales';
- Elimination of weight constraints;
- Lower costs in favorable soil conditions.

The lubricant has several functions: 1) it reduces friction for the passing LawnBoard; 2) it acts as a coolant for the LawnBoard; 3) as the water is retained by the material fibers, it acts as a shock absorber when the surfer falls; and 4) the water reduces the risk of friction burns when the surfer falls and slides on the material. Thus, the sheet of water plus the water retained in the fibers of the surface material provide for an ample supply of water for the smooth gliding of the passing LawnBoard, resulting in a hydroplaning experience like that of skim boarding.

At the bottom of the open pipes are gratings of adequate width to allow the water to seep through a portion of perforated surface material and run into a collection channel underneath. Depending on the water availability, the water may either run off in a creek or be recycled by means of a pump/filter system. Each installation requires a site-specific water supply and recirculation solution using commercially available components.

In summary, the invention has the following advantages and objectives

a) A new sport similar to surfing and snow boarding;

b) Varying slopes and curves for all skill levels, from beginners to experts;

c) Suitable for large numbers of surfers

d) Enables ski resorts to utilize large portions of their investment (access roads, ski lifts, lodges, stores) in their off-seasons;

e) Can be installed as a stand-alone or as part of a theme park in areas where there are no oceans, lakes, or mountains, thus bringing the surfing experience to new areas.

Brief Description of Drawing Figures

In the drawings, closely related figures have the same number but different alphabetic suffixes.

*1. ELEMENTS OF THE **S**URF**S**LIDE SPORT*

Fig. 1a. shows the SurfSlide trails from beginner to expert slope, all adapted to the natural terrain of a given hill side.

Fig. 1b. shows the stand-up version of a lawn board

Fig. 1c. shows a cross-sectional support, consisting of two identical side mounts and a center mount.

*2. THE **S**URF**S**LIDE APPARATUS*

The support structure, usually made from steel or fiberglass, is so large that it takes several levels of magnification to show its make-up.

Fig. 2a shows the horizontal projection of a 120 ft long SurfSlide structure containing a 45° bend and three changes in slope.

Fig. 2b shows a side view of the SurfSlide with planking, support structure and slope changes, adapting to the given terrain.

Fig. 2c shows details of a concrete footing.

Fig. 2d shows the top view of a planked SurfSlide with an S-curve

Fig. 2e shows light-weight hollow core pultrusions with a removable attachment and artificial turf.

Fig. 2f shows a thermoplastic pultrusion connector for straight and angled connections of pultrusions.

Fig. 2g shows an attachment of pultrusions to the support structure.

3. WATER SUPPLY & RECIRCULATION

Fig. 3a shows pultrusion used as gutter.

Fig. 3b shows a thermoplastic water supply insert.

*4. IN-GROUND **S**URF**S**LIDE*

Fig. 4a shows the cross section of an in-ground SurfSlide.

Fig. 4b shows a section of the gutter system.

LIST OF REFERENCE NUMERALS

12	Adhesive	64	Planking (Pultrusions)
14	Artificial Turf	66	Pultrusion Connector
16	Bend	68	Railing
18	Board	70	Removable Attachment
20	Center Section	72	Rolled L-Profile, Steel
22	Chair Lifts	74	Room for Utility Conduits
24	Clamp	76	Saftey Walkway
26	Concave Fins	78	Seal
28	Concrete Channel	80	Shim Adjustment
30	Concrete Footings	82	Side Trellis
32	Connection Fingers	84	Slope Decrease
34	Connector for Pultrusions	86	Slope Increase
36	Control Valve	88	Soil / Gravel
38	Coping	90	Steel Shoe
40	Cover (Concrete)	92	Stiffening Steel Sheet
42	Extension for Fast Turns	94	Support Plate
44	Flexible Pipe	96	Surf Slide
46	Foot Straps	98	Surfer, 6 Foot tall, to scale
48	Grating	100	T-Connector
50	Gunite	102	Tilt
52	Gutter	104	Trellis Support Structure
54	Gutter Feed Insert	106	Water Collection Channel

56	Gutter Feed Pipe	108	Water Distribution Chamber
58	Knock-through	110	Water Exit Slot
60	Lock Strip	112	Water Return Pipe
62	Original Contour	114	Water Supply Main
63	Pipe Stub		

Detailed Description of Drawing Figures

1. ELEMENTS OF THE SURFSLIDE SPORT

Figure 1a renders a complete SurfSlide park with SurfSlides (96) of different slopes for different skill levels. The SurfSlides and the chairlift installations (22) follow the natural terrain to minimize the environmental impact. The use of planking imposes distinct angles instead of curves.

Figure 1b shows a Surfin'Turf™ lawn board, a short light weight board (18) with concave fins (26) for directional control and foot straps (46). The special form of this board is protected by a recently granted design patent.

Figure 1c. A typical embodiment of the invention is the open pipe which is constructed of planking (64), supported by a trellis support structure (104) which rests on concrete footings (30). For reason of transport, the pipe support consists of of a center section (20) and two side sections (82) which are bolted together. The open pipe can be formed from any material which lends itself to form large cylindrical sections such as sheet metal, planking, or preformed fiberglass sections. In this example, the open pipes are built from hollow core fiberglass pultrusions (64) which offer high strength at low weight and are highly weather resistant; they are easy to transport, to handle and to cut to size on site. Pultrusion planking (64) offers smooth surfaces suitable for adhesive bonding to the rolled steel L-profiles (72) and for the removable attachment of the artificial turf (14) with an adhesive or hook & loop tapes.

The cut-outs in the stiffening steel sheet (92) serve for stress relief. In the center section (20) they provide room for utility conduits (74) such as the water collection channel (106), the water supply main (114), the water return pipes (112) and others. A fast action vertical extension (42) for the outside of turns can be added to the trellis support structure(104). This extension allows for gravity defying maneuvers as well as keeping the riders in the SurfSlide. In all places without such extension, a protruding coping (38) is installed along the upper rim of the SurfSlide to ensure that anyone surfing beyond the upper rim will fall back into the open pipe. Just below the coping (respectively below the extension) is the gutter (52) located to dispense the water or other lubricant. On the bottom, the water escapes through a grating (48) into the water collection channel (106).

To allow for easy service of the artificial turf (14) and for rescue in the event of an accident, a safety walkway (76) is provided on top of the trellis support structure (104), secured by a railing (68).

The relation of a 6 foot tall Surfer (98) and a 30 foot diameter open pipe is sketched to scale.

*2. THE AERIAL **SURFSLIDE***

The Figures 2a, 2b, and 2d show projections of an above-ground SurfSlide.

Figure 2a shows the horizontal projection of a 120 foot long SurfSlide trellis support structure (104) with a slope increase (86) and two slope decreases (84). The 45° bend (16) in this example is composed of two 15° sections and two 7.5° extensions added to the straight elements. The bottom structure from line A-B to line C-D lies all in one plain which is tilted upward (102) around the axis X-X. Hence, Point C is located higher than Point D and the lowest point inside the SurfSlide is not always in the center. Provisions must be made to bring the water from the lowest point to the water collection channel (106)(Fig.1c).

For simplicity, only the outer trusswork is shown. Dimensions vary, but a 6" square tube may be used as a guideline for the outer beams.

Figure 2b shows a side view of the planked (64) SurfSlide system. The exterior of the open pipe is supported by the trellis structure (104) and mounted on concrete footings (30) with steel shoes (90) comparable to bridge constructions. The slope increases (86) and decreases (84) are mitered between the abutting straight sections.

Figure 2c shows details of a concrete footing (30). The trellis structure (104) rests with a steel shoe (90) on a support plate (94). The space between the two screws has to be calculated to accommodate thermal expansions and contractions. To level out inaccuracies of the footing or to compensate for settlement of the soil, the position of the support plate can be corrected with one or more shim adjustments (80).

Figure 2d shows a vertical projection of a section with an S-curve. Since both, the pultrusions (64) and the trellis support structures are manufactured in straight sections as shown in Figures 2b and 2d, all the turns and changes in slope must be composed of discrete angles. The angles for turns should be 15 degrees or less to assure a smooth ride. Turns of more than 15 degrees shall be composed of smaller sections. Changes in slope should generally be 5 degrees or less, except for expert runs where jumps are desired.

On both sides of the SurfSlide is, above the gutter line, a safety walkway (76) at least 2 foot wide for service and emergency assistance. The walkway is secured with a railing (68).

Figure 2e illustrates the means of attaching the artificial turf (14) to the inner surface of the SurfSlide. Several commercial turf products are available, mostly manufactured for golf courses, football fields and other sports facilities. The artificial turf (14) shall be selected for good water retention of the fibers which may measure between 0.5" and 1.25" in length. The artificial turf (14)must withstand the full temperature range of the region where it is installed, which often means a range from -25° F to 120° F. It must also be highly UV light resistant to avoid embrittlement and discoloration. The attachment (70) to the planking (64) must be removable to rotate artificial turf (14) sections or to replace worn areas. This can be accomplished with hook & loop strips or with a suitable water resistant, removable adhesive.

Figure 2f illustrates a thermoplastic pultrusion connector (34). Its connecting fingers (32) can be inserted into the hollow core pultrusions (64)(Fig.2e) , be heated

and bent up to 15 degrees of composite angles. Upon cooling, it accepts the desired angle permanently.

Figure 2g shows a section of the trellis support structure shown in Fig. 1c (104). The two rolled L-profiles (72) welded to the stiffening steel sheet (92) form the inner circle of the open pipe and provide a flat surface suitable to glue the pultrusions (64). The adhesive (12) must be suitable to compensate for small inaccuracies of the trellis support structure and remain elastic to accommodate thermal expansions without breaking the bond or the pultrusions.

The endcaps for shoe-in of the surfers into the pipe at the start and for a controlled exit at the finish can be constructed from wood, formed from fiberglass, or poured from concrete, depending on the topographic situation and the soil conditions. (not shown here).

3. WATER SUPPLY AND RECIRCULATION

Figure 3a shows a gutter detail. It is designed to allow the lubricant, usually water with or without additives, to exit as a thin sheet and cover the inner surface of the open pipe. The lubricating water is supplied from a reservoir or water tower located above the SurfSlide and fed to the gutters through a supply main (114)(Fig. 1c). As shown, the best material to use for the gutter is a hollow pultrusion (64) with sawed-in

slots (110). The gutters are arranged along the rim on both sides of the SurfSlide; they allow a controlled flow of water to be released for hydroplaning.

Figure 3b is a Gutter Feed Insert (54) inserted with its fingers (32) into the gutter pultrusions in regular intervals to assure a continuous sheet of water over the entire turf surface. This thermoplastic insert is made very similar to the pultrusion connector shown in Fig. 2f. It can also be inserted in straight or angled positions. The pipe stub (63) is connected to the supply main shown in Fig. 1c (114).

Each supply pipe feeding an insert is equipped with a valve (not shown) for fine-tuning the amount of water distributed. For gutter connections without water supply, a connector as shown in Fig. 2f may be used.

Note: If lubricant recirculation is required, commercial pump-filter units will be used, not shown here.

*4. THE IN-GROUND **SURFSLIDE***

Figure 4a shows an in-ground version of the SurfSlide. In this version, the trellis support structure is replaced by the surrouding soil (88), and the planking is replaced by a gunite cement or sprayed fiberglass wall (50). The gutter system (52), the water

collection channel (106) with the grating (48) above it, and the artificial turf (14) are all arranged like in the aerial version.

In order to find the soil sufficiently compacted for gunniting, it is best to scoop out the entire depth of the open pipe below the original contour (62) of the terrain. The safety walkway (76) consists in this version of concrete slabs covering the gutter system shown in Fig. 4b. and 4c

Figure 4b ~~shows a~~ section of the gutter system housed in a precast concrete channel (28) for use with an in-ground SurfSlide structure. The water main (114) is connected to a flexible pipe (44) with water exit slots (110). The pipe is held in place with two lock strips (60) made in bright color from an elastic plastic or rubber. The lock strips with the flexible pipe (44) in the middle make for a clean looking band which runs along the top of the ramp and also serves as coping.

The water exits from the flexible pipe (44) through the water exit (110) slots into water distribution chamber (108). From there, the water escapes through serrations on the round surfaces of the lock strips which hug the flexible pipe and forms a uniform sheet on the artificial turf (14). The amount of exiting water is controlled by the control valve (36).

The feed connection from the water supply main (114) to the flexible pipe (44) goes through a concrete knock-through (58) which separates the water distribution chamber (108) from the utility channel which houses the water main (114) and other utility conduits (not shown). Around this knock-through (58), the chamber (28) is

enlarged to accommodate the clamps (24) which attach the flexible pipes (44) to a T-connector (100). To prevent backflow into the utility channel (not shown), a seal (78) must be installed.

The concrete gutter channel (28) rests on soil or gravel (88) which is level with the upper end of the gunite (50). The channel and the gunite are connected with a tongue-and-groove arrangement to ensure a clean looking rim of the in-ground open pipe. The concrete cover (40) protects the gutter arrangement and serves as a safety walkway at the same time.

Operation of the Invention

1) CONSTRUCTION : AERIAL STRUCTURE

The SurfSlide Structure

To facilitate manufacturing, transport, and assembly, the structure consists of standardized straight and angled sections which are bolted together on-site.

A center section (20)(Fig.1c) is set on the lowest pair of prepared concrete footings (30). The bottom beams are attached to the center section and rest on the second pair of footings. The next center section (20)(Fig.1c) is put in place, bolted to the resting beams. A diagonal brace completes the first bottom trellis (not shown). The

bottom trellises are built for the entire surf slide run and measured carefully to make sure that all levels, angles and distances are correct.

The side sections (82)(Fig.1c) are bolted to both sides of the center sections (20)(Fig.1c) and braced together with straight and diagonal beams to complete the side trellises shown in Fig.2a.

To complete the structure, end caps for shoeing surfers into the slide and for safe exit at the end must be built to fit the terrain. If extensions for fast turns are used (42)(Fig.1c), sprinklers (not shown) may be installed on the safety walkway (76)(Fig.1c) on the opposite side to shoot a jet of water onto the extension which is located above the gutter (52)(Fig.1c). Also, a "traffic signal system" (not shown) may be installed to avoid one surfer from plowing into another one who has fallen with his board.

The trellis support structure (104)(Fig.1c) must be calculated to support the highest load expected. In mountainous areas in the North, this could be 3 feet of wet snow. In the South, high side winds could be the primary concern. Also, the anchoring of the footings must be designed to carry such loads.

Water Supply and Evacuation

Prior to planking, the water collection channel (106)(Fig.1c) is placed in the center section (20)(Fig.1c) and connected to the water return pipe (112)(Fig.1c) in regular intervals. Above the water collection channel (106)(Fig.1c), a grating

(48)(Fig.1c) is placed and lined up parallel to the trellis beams. Then, pultrusions or other planks (64)(Fig.1c) are placed on both sides of the grating to plank the open pipe.

The highest positioned "plank" on either side is the gutter (52)(Fig.3a) which can be a water carrying pultrusion or another water supply pipe with water exit slots in order to lubricate the walls from top to bottom. The gutters (52)(Fig.1c) are connected to the water supply main (114)(Fig.1c) at regular intervals. Other utility pipes are put in place (74)(Fig.1c) and supported as needed with braces attached to the bottom trellises.

Straight and angled gutter runs (52)(Fig.1c), made from pultrusions, are joined with thermoplastic pultrusion connectors as shown if Fig.2f. In addition, about every 10 feet to 12 feet, a water supply insert, as shown in Fig.3b, is inserted into the gutters and connected to the water supply main (114)(Fig.1c). The water supply insert is made from the same thermoplastic material as the thermoplastic pultrusion connector in Fig.2f and is inserted the same way. Each connection to the water supply main must have a flow control valve (not shown) to fine tune the amount of water released. - The water supply and, if necessary, the recirculation system must be designed for every installation.

Planking

For the above-ground SurfSlide, a trellis support structure (104)(Fig.1c) made from steel with fiberglass pultrusions as planking material has been chosen for the following reasons:

- the steel structure for the ease of pre-manufacture, transport and on-site assembly;
- the pultrusions for their high strength-to-weight ratio and climatic resilience, their ease of transportation and of cutting them to length in their final position. Both materials offer high strength at reasonable costs.

The pultrusions (64)(Fig.1c) are placed on both sides of the grating (48)(Fig.1c), each pultrusion being oversized in length by 6" to 12" for the final cut. As the pultrusions are put in place, they are glued to the rolled L-profiles (72)(Fig.2g). The adhesive must withstand the entire temperature range of the geographic area where the SurfSlide is installed; it must be resistant to water and dampness, and it must remain elastic to accommodate differences in thermal expansion between the steel support structure and the fiberglass pultrusion planking.

Lined-up pultrusions (64)(Fig.1c) are cut either straight or mitered for angled turns. To mark the final cutting line, a construction laser can be used. Since even small angular inaccuracies lead to substantial errors in the large dimensions of the SurfSlide, the laser has to be positioned very accurately. The final cut can then be made with a handheld powertool with an abrasive cutting wheel. Thereupon, the pultrusions (64) (Fig.1c) roughly pre-cut for the next section, are laid in place (not glued) so their edges hit the finished pultrusions of the previous section. The laser is then moved a few inches to show a line parallel to the previous cut in order to cut the new pultrusions under the same angle. - Again starting in the center next to the grating (48)(Fig.1c) one

thermoplastic pultrusion connector as shown in Fig.2f is inserted between each pair of abutting pultrusions. If the connector is straining to accommodate the angle, it can be warmed up to soften and adopt the angled form while cooling down. At this point, the pultrusions of 'section 2' are also glued to the steel support.

The Turf

The artificial turf (14)(Fig.2e) is installed on the inner surface of the SurfSlide. To facilitate replacement of worn sections, it is recommended to install the artificial turf (14)(Fig.2e) in manageable sizes, referred to as "turf tiles", and to attach them to the pultrusions with either a hook and loop tape as shown in Fig.2e or with a water-resistant, removable adhesive. The requirements for such adhesive are that the turf tiles solidly adhere to the pultrusions, irrespective of temperature and water influence to assure that under no circumstances the edges lift off and a lawn board gets caught underneath a turf tile; on the other hand, the adhesive must be removable for replacement or rotation of turf tiles.

Design Constraints

The rigidity of the pultrusions imposes a rigid design and precision manufacturing of the trellis support structure (104)(Fig.1c) and the concrete footings (30)(Fig.2c) on which the structure rests. To balance out inaccuracies of the concrete footings or to compensate for settlement in the soil, the concrete footings (30)(Fig.2c) provide for shim adjustments (80)(Fig.2c).

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Part of that rigid design is that, in Fig.2a, the bottom trellis A-B to C-D is in the same ~~plain~~ plane which is tilted around the axis x-x by the tilt angle (102)(Fig.2a). This has as a consequence that the point C is located higher than point D so that the lowest point in the ramp is no longer in the center, requiring adjustments in the water collection system.

2) CONSTRUCTION : IN-GROUND STRUCTURE

In sloped areas with soft, stable ground and without bedrock, the SurfSlide construction can be simplified by scooping out the soil and shaping it into an open pipe, then guniting the shell with "pool building" techniques (Fig.4a).

Prior to guniting, the water collection channel (106)(Fig.4a) made from precast concrete, is inserted in the bottom of the excavated open area. Similarly, the gutters (52)(Fig.4a), water mains (114)(Fig.4b) and other utility conduits are housed in profiled concrete channels (28)(Fig.4b) positioned on level soil or gravel (88)(Fig.2b) on both sides of the open pipe.

The artificial turf (14) is attached as described above. Similarly, all other design features are identical to the aerial structure. In fact, both versions can be combined to take the best advantage of a given terrain.

3) CONCLUSIONS, RAMIFICATIONS AND SCOPE

The reader will see that the SurfSlide invention provides a new *SPORT OF SKILL* which consists of controlled movements on a lawn board over an open pipe ramp system covered with artificial turf. Such sport is usually not limited by geography, terrain or climate.

While my above description contains many specifities, these should not be construed as limitations on the scope of my invention but rather as an explanation of the preferred embodiments. Many variations are possible such as aerial SurfSlides or in-ground SurfSlides. Also, other types of vehicles such as inner tubes, sleds or tobbogans can be used for a ride on the SurfSlide.

SurfSliding is a sport similar to surfing while executing movements similar to skateboarding and snowboarding. SurfSliding can be experienced in various geographical locations and is not confined to the topographical layout of the land. It differs from water slide amusements in that the **patron participates actively in the ride**. It inspires repeat visits to a facility so the patron can improve his/her skills similar to skiing or snowboarding.

The configuration of this ramp system can reflect a wide variety of designs and layouts for various skill levels of surfers. The arrangement of the ramps is only limited by the imagination of the designer. Depending on the terrain and the desired degree of SurfSlide challenge, different cross-sectional designs may be used, ranging from flat to circular to elliptical or parabolic, lifting or lowering the side walls.

All components of the SurfSlide ramp system and component parts are constructed from commercially available materials. Each project engineer can make changes to use materials available in his area. The open pipes of the invention can be made of straight, hollow fiberglass pultrusions which are easy to transport over the road. Since the open pipe size requirements depend on the customer specifications, the support structure can become very large. If so, it should be designed for pre-manufacture of sections which can be transported on regular trucks (no oversize permits and escorts) and bolted together on-site on prepared concrete pilings.

The basic riding concepts required to SurfSlide are cross-overs from skateboarding, skimboarding, surfing and snowboarding which means that the basic movements are well established but now applied in a novel manner. A combination of skill and balance are used to perform maneuvers along a ski slope, an ocean swell, a city street, or now, along a SurfSlide ramp. The primary mechanics of riding are as follows:

Balance Constant body weight shifting is required to keep on top of and maintain control of a board. In a fluid and dynamic medium, balance is crucial.

Skill Persistent efforts to ride eventually become learned skills, whereby riders constantly make maneuvers based on given situations. Skilled riders spontaneously change their body dynamics to adapt to surface conditions.

Body *1. Stance*

Using bent knees, a rider puts one foot forward (steering control) and one foot back (power and balance). The rider and board form an A-frame for stability and control.

2. Torque

To turn, a rider uses twisting movements of the body, ultimately controlling the board with the feet. This footwork allows the rider to change directions, using a rail-to-rail transition flow for board and path control.

Grace Controlled movements allow for the aesthetic flow of turns. This graceful pattern of riding is known as style. Each individual rider develops his or her own personal style.

The fascination of young people with 'boarding' skills leads to competition and offers a sense of accomplishment which attracts repetitive business for the surf slide operator.

Accordingly, the scope of the invention should be determined not by the illustrations provided but by the attached claims and their legal equivalents.